IN THE CLAIMS

Please replace all prior versions, and listings, of claims in the application with the following list of claims. Additions are indicated by underlining and deletions are indicated by strikeouts and/or double bracketing.

1-125. (Cancelled)

126. (Currently amended) A method, comprising:

providing a free-standing semiconductor nanoscale wire;

patterning a mask on the nanoscale wire to define at least a first portion not covered by the mask and a second portion covered by the mask;

exposing the first portion but not the second portion to a bulk metal; and

diffusing at least a portion of the bulk metal into the first portion of the nanoscale wire.

127. (Previously presented) The method of claim 126, wherein the semiconductor nanoscale wire comprises silicon.

128. (Previously presented) The method of claim 127, comprising diffusing at least a portion of the bulk metal into the first portion of the nanoscale wire to form a metal silicide having a stoichiometric ratio of silicon and at least one metal.

129. (Previously presented) The method of claim 128, wherein the metal silicide comprises nickel silicide.

130. (Previously presented) The method of claim 126, wherein the bulk metal comprises a transition metal.

131. (Previously presented) The method of claim 126, wherein the bulk metal comprises nickel.

132. (Previously presented) The method of claim 126, wherein the first portion of the nanoscale wire has a smallest dimension less than 200 nm.

133. (Previously presented) The method of claim 126, wherein the nanoscale wire is a single crystal.

134. (Previously presented) The method of claim 126, wherein the mask comprises photoresist.

135-136. (Cancelled)

137. (Previously presented) The method of claim 126, wherein the nanoscale wire is a nanowire.

138. (Previously presented) The method of claim 126, comprising diffusing at least a portion of the bulk metal into the first portion of the nanoscale wire such that the first region has a resistivity of less than about 60 microOhm cm.

139. (Previously presented) The method of claim 126, comprising diffusing at least a portion of the bulk metal into the first portion of the nanoscale wire such that the first region is able to carry a current density of at least about 10^8 A/cm^2.

140. (Currently amended) A method, comprising:

diffusing at least a portion of a bulk metal into at least a portion of a semiconductor nanoscale wire having an approximately circular cross-section, the bulk metal and the semiconductor nanoscale wire being adjacent, wherein the semiconductor nanoscale wire comprises at least one portion having a smallest dimension of less than about 500 nm.

141. (Previously presented) The method of claim 140, wherein the bulk metal comprises nickel.

142. (Previously presented) The method of claim 140, wherein the semiconductor nanoscale wire comprises silicon.

143. (Currently amended) The method of claim 140, further comprising diffusing at least a portion of the bulk metal into at least a portion of the semiconductor wire to form a metal silicide.

144. (Previously presented) The method of claim 143, wherein the metal silicide has a stoichiometric ratio of silicon and at least one metal.

145. (Previously presented) The method of claim 144, wherein the metal silicide comprises nickel silicide.

146. (New) A method, comprising:

providing a semiconductor nanoscale wire;

patterning a mask comprising photoresist on the nanoscale wire to define at least a first portion not covered by the mask and a second portion covered by the mask;

exposing the first portion but not the second portion to a bulk metal; and

diffusing at least a portion of the bulk metal into the first portion of the nanoscale wire.